

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

**Los Angeles, California
April 25, 2002
451st Regular Meeting**

ITEM: 10

SUBJECT: Consideration of a proposed resolution amending the Water Quality Control Plan (Basin Plan) to update ammonia objectives for inland surface waters.

PURPOSE: First, to reflect the revised freshwater criteria developed by U.S. EPA, in the "1999 Update of Ambient Water Quality Criteria for Ammonia," December 1999. The 1999 Update contains U.S. EPA's most recent freshwater aquatic life criteria for ammonia. Second, to incorporate saltwater objectives, based on those in the California Ocean Plan, to address inland surface waters that may be more characteristic of saltwater than freshwater (i.e., enclosed bays and estuaries). Third, to establish implementation provisions for the objectives.

BACKGROUND: A final staff report outlining the proposed amendment, justification for the revisions and staff's recommendation is attached. In summary, the new objectives reflect research and data analyzed since 1985, and represent a revision of several elements in the 1984 guidance, including the relationship between ammonia toxicity, pH and temperature, and the recognition of increased sensitivity of early life stage forms of fish to ammonia toxicity. The 1984 criteria were based on un-ionized ammonia (NH_3), while the 1999 criteria are expressed as total ammonia (un-ionized plus ionized ammonia, or $\text{NH}_3 + \text{NH}_4^+$). The criteria apply to inland surface waters, including enclosed bays and estuaries with salinity levels characteristic of fresh waters, and do not impact the ammonia water quality objectives contained in the California Ocean Plan.

The current Basin Plan ammonia objectives for inland surface waters were derived from the U.S. EPA document, "1984 Ambient Water Quality Criteria for Ammonia." These objectives were based on the results of toxicity tests on ammonia published prior to 1984. In 1998 U.S. EPA issued an ammonia criteria update that was to revise the 1984 ammonia criteria document. The update was based on additional information on aquatic life criteria for ammonia contained in various reports (Heber and Bellentine 1992; U.S. EPA 1989, 1996 and 1998) and results of additional toxicity tests published since 1985. In response to public comments, U.S. EPA modified its 1998 criteria recommendations and replaced them with the 1999 Update. The proposed

amendment would update the current Basin Plan objectives to be consistent with the recommendations of the 1999 Update. In addition, the proposed amendment addresses a previous gap in the Basin Plan by establishing ammonia objectives for a subset of inland surface waters (i.e., portions of enclosed bays and estuaries) that are more characteristic of saltwater than freshwater.

**CURRENT
STATUS:**

Last year, the Regional Board identified updating the ammonia objectives for inland surface waters in the Los Angeles Region as the second highest priority during its Triennial Review of Basin Planning Priorities (Regional Board Resolution 01-011, adopted on May 31, 2001). Staff began discussing the proposed amendment with the U.S. EPA and the State Water Resources Control Board (State Board) earlier this year. On February 5, 2002 the staff report with attachments was mailed to all interested persons on the Basin Planning mailing list, totaling 515 individuals and organizations. Furthermore, notice of the public hearing was published in two newspapers of general circulation by February 8, 2002. All interested persons were given a 45-day period to submit comments to the Regional Board on the proposed amendment. As the March 28, 2002 Board Meeting approached, Regional Board staff also received comments from the U.S. EPA. Because comments received were cumulatively significant, Regional Board staff decided to make changes to the documents released on February 5, 2002, reissue the documents for a 30-day comment period, and continue the item to the April 25, 2002 Board Meeting. Thus, the documents were re-noticed to the public on March 22, 2002 for comment until April 22, 2002.

ISSUES:

There are several issues Regional Board members should be aware of in regards to adopting and establishing implementation provisions for ammonia objectives for inland surface waters.

The proposed objectives are dependent upon several variables – most notably pH, temperature, presence or absence of salmonid types of fish, and early life stages of fish. The proposed objectives are generally less stringent than the existing objectives but for the typical conditions that exist in the Los Angeles Region, these changes will be only slightly less stringent. As can be seen in Figures 1,2,4,5,6,7,8,9,10 and 11, the difference between the proposed and existing objectives decreases as pH levels increase. The inland surface water bodies in the Los Angeles Region tend to exhibit pH values in the range of 7.25 to 8.80. The larger differences between the existing objectives and the proposed objectives occur below pH values of 7.25.

When applying the freshwater acute objectives to a water body, it is necessary to determine whether salmonids are present or absent. The designated beneficial use “cold water habitat” (“COLD”) in the Basin Plan specifies an environment at which

temperatures are appropriate for various life stages of salmonid fish (e.g. salmon and trout). In the absence of additional information to the contrary, it will be assumed that salmonids may be present in waters designated in the Basin Plan as "COLD" and are not present in waters not designated as "COLD." In addition, the beneficial use "MIGR" will also be used to indicate the salmonid present condition. "MIGR" (migration of aquatic organisms) supports uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish (e.g. steelhead trout).

When applying the freshwater chronic objectives, it is necessary to determine whether early life stages (ELS) of fish are present or absent. Water bodies with a beneficial use designation of "Spawning, Reproduction, and/or Early Development" ("SPWN") support high quality aquatic habitats suitable for reproduction and early development of fish and therefore will be designated as ELS present waters. ELS are not assumed to be present in all water bodies. However, where present, ELS are assumed to be present year round. Should further site-specific studies demonstrate otherwise, a seasonal ELS provision may be adopted through the Basin Plan Amendment process. The Basin Plan Amendment process must be followed to develop a seasonal beneficial use designation.

Several agencies requested a compliance schedule for the new objectives or postponing their inclusion in permits until their Ammonia Water Effects Ratio (WER) study underway is completed. The proposed amendment does not incorporate the compliance schedule associated with the current ammonia objectives. Given that the proposed objectives are more lenient than the current objectives, that discharges must comply with the current objectives by June 13, 2002, and the compliance timeframe was long (eight-years), there is little justification for an extension. In addition, the Regional Board is not required to provide a new compliance schedule when the Regional Board relaxes a water quality objective. It is true that the Porter-Cologne Act (Water Code, § 13242) requires a program of implementation and the Clean Water Act's continuing planning process requires adequate implementation (33 U.S.C. § 1313(e)(3)(F)). However, these requirements do not require the Regional Board to establish a new compliance schedule for a relaxed water quality objective.

Several agencies (including the County Sanitation Districts of Los Angeles, City of Los Angeles and City of Burbank) are currently undertaking a study to determine whether it might be appropriate to adopt site-specific ammonia objectives for several water bodies. General guidelines for the development of site-specific objectives (SSOs) are outlined in Chapter 3 of the Basin Plan. Any site-specific objectives must be adopted by the Regional Board as a

Basin Plan Amendment and subsequently approved by the State Board, OAL and US EPA. The result of these site-specific studies would be the development of Water Effects Ratios (WERs) for the Los Angeles River, San Gabriel River, and Santa Clara River. If approved through the Basin Plan Amendment process, the objectives would be multiplied by the Water Effects Ratios (WERs), modifying the objectives herein for the water body for which the WER was developed. The use of Water Effects Ratios (WERs) to modify ammonia objectives based on site-specific conditions is an EPA-approved methodology for accounting for differences between site water and laboratory water (on which the national criteria are based).

PROPOSED CHANGES:

The most significant differences in the 1999 U.S. EPA guidance for ammonia as compared to the existing Basin Plan objectives are:

1. Acute criteria are no longer temperature-dependent but remain dependent on pH and fish species present.
2. There is a greater recognition of the temperature dependence of the chronic criteria, especially at low temperatures.
3. Early Life Stage (ELS) chronic criteria were introduced.
4. Chronic criteria are no longer dependent on the presence or absence of specified fish species, but remain dependent on pH, temperature and the presence/absence of ELS.
5. A 30-day averaging period for the chronic criteria replaced the 4-day averaging period.

Under the 1984 guidance, the acute criteria were dependent on pH, temperature, and the presence or absence of salmonids. Under the updated guidance, the acute criteria are dependent on pH and fish species, but not temperature.

The 1984 chronic criteria were dependent mainly on pH and there was no temperature dependency below 20 degrees. The updated chronic criteria are dependent on pH and temperature. At lower temperatures, the chronic criteria also are dependent on the presence/absence of early life stages of fish (ELS), regardless of fish species. Another significant revision in the 1999 Update is U.S. EPA's recommendation of 30 days as the averaging period for the chronic criteria instead of 4 days. The averaging period has been extended because the most sensitive test species used, *fathead minnow* (*Pimephales promelas*) and fingernail clam (*Musculum transversum*) show their sensitivity after long periods of exposure.

As for the application of these objectives to water bodies in the Los Angeles Region, in addition to the "cold water habitat" (COLD) beneficial use, the beneficial use "MIGR" will be used to indicate

the salmonid present condition for the acute objective. "MIGR" (migration of aquatic organisms) supports uses of water that support habitats necessary for migration, acclimatization between fresh and salt water, or other temporary activities by aquatic organisms, such as anadromous fish.

When applying the chronic objective, only water bodies designated with the beneficial use "Spawning, Reproduction, and/or Early Development" ("SPWN") will be designated as ELS present waters, rather than designating all water bodies in the region as ELS present waters. By definition, water bodies with the beneficial use designation of "Spawning, Reproduction, and/or Early Development" ("SPWN") support high quality aquatic habitats suitable for reproduction and early development of fish. Early Life Stages are assumed present year-round unless a site-specific study is conducted which justifies a seasonal provision. The Basin Plan Amendment process must be followed to develop a seasonal beneficial use designation. Regional Board staff does not have sufficient data to establish region-wide the months when all ELS are absent.

According to the Basin Plan, inland surface waters include enclosed bays and estuaries. Enclosed bays and estuaries are often characterized by a brackish environment (i.e., an environment with salinity levels in between those of freshwater and those of saltwater). U.S. EPA's "1999 Update of Ambient Water Quality Criteria for Ammonia" addresses freshwater, while the California Ocean Plan addresses only ocean waters. Neither document addresses enclosed bays and estuaries with salinity levels in between freshwater and saltwater. To address this gap, Regional Board staff proposes the following solution. For those water bodies with salinity levels characteristic of freshwater, the freshwater objectives proposed in this Basin Plan Amendment will apply. For those water bodies with salinity levels characteristic of saltwater, the saltwater objectives included in this Basin Plan Amendment will apply. For water bodies with salinity levels between those of freshwater and saltwater, staff proposes to use the same guidelines as those in the National Toxics Rule and California Toxics Rule to determine whether fresh or saltwater objectives should apply. These guidelines require that the more stringent of the freshwater or saltwater objectives apply in these situations.

DISCUSSION:

In May of 2001 the Regional Board identified updating the ammonia objectives as the second highest priority in its Triennial Review of the Basin Plan. The objectives proposed herein represent U.S. EPA's current recommended federal Clean Water Act section 304(a) criteria for ammonia, and reflect the latest scientific knowledge on the toxic effects of ammonia on aquatic life. It is important that these objectives be based on the best

science and most recent data available, since in the very near term, and in subsequent years, the Regional Board will consider several Total Maximum Daily Loads (TMDLs) for ammonia. Adoption of this Basin Plan amendment will update the Region's Ammonia Water Quality Objectives, which serve as a basis for numeric targets in TMDLs. Furthermore, the ammonia objectives form the basis for establishing enforceable water quality-based effluent limitations in discharge permits.

COMMENTS RECEIVED:

The deadline for written comments on the first notice was March 22, 2002. A total of 55 comments were received by this deadline from the following agencies: County Sanitation Districts of Los Angeles; City of Los Angeles, Bureau of Sanitation; City of Santa Clara; and City of Burbank. The comment deadline for the March 22 draft is April 22. Staff has received one comment letter, from the U.S. EPA, on the March 22nd draft. Staff will summarize and respond to all significant comments on the March 22nd Basin Plan amendment package at the April 25, 2002 Board Meeting. A responsiveness summary has also been prepared and will be mailed to those agencies that commented, posted on our web-site and available at the April 25, 2002 Board Meeting.

OPTIONS:

1. **No action.** To maintain the existing objectives would be to ignore the latest, peer-reviewed scientific data.
2. **Adopt U.S. EPA recommended criteria and associated implementation provisions.** By adopting the proposed revisions to the ammonia objectives for fresh water, the Regional Board will make the region's ammonia objectives consistent with U.S. EPA guidance, which is based on the latest research. Finally, by acting proactively, we will be able to more efficiently carry out other activities such as developing the region's 303(d) list, developing TMDLs, and specifying effluent limits in discharge permits.
3. **Adopt U.S. EPA recommended criteria and associated implementation provisions with modifications arising as a logical outgrowth of the proposed amendment.** The Regional Board staff hereby solicits comments on possible alternative criteria that may be used for the ammonia water quality objective for inland surface waters.
4. **1) Adopt U.S. EPA recommended criteria, 2) incorporate saltwater ammonia objectives from the California Ocean Plan to address inland surface water bodies with salinity levels more characteristic of saltwater than freshwater, and 3) adopt associated implementation provisions.**

RECOMMENDATION:

Adopt the proposed Basin Plan amendment, revising ammonia objectives for inland surface waters and establishing implementation provisions, as set forth in the Basin Plan Amendment attached to the Tentative Resolution.

ATTACHMENTS:

Staff Report, February 5, 2002

CEQA Environmental Checklist, February 5, 2002

Public Comments:

County Sanitation Districts of Los Angeles, March 22, 2002

City of Los Angeles, Bureau of Sanitation, March 22, 2002

City of Santa Clara, March 20, 2002

City of Burbank, March 21, 2002

Responsiveness Summary, April 12, 2002

Tentative Resolution, February 5, 2002

Amendment Language, February 5, 2002

Staff Report, March 22, 2002

Tentative Resolution, March 22, 2002

Amendment Language, March 22, 2002

Change Sheet for Basin Plan Amendment, March 22, 2002

Public Comments:

U.S. EPA, April 3, 2002

Staff Report, April 12, 2002

Tentative Resolution, April 12, 2002

Amendment Language, April 12, 2002

Change Sheet for Basin Plan Amendment, April 12, 2002